

WHAT IS CLAIMED IS:

1. A composite dielectric filter device comprising:  
a substantially parallelepiped rectangular dielectric block;  
a plurality of inner conductors extending in parallel from one face of the dielectric block to the opposite face;  
5 an outer conductor arranged on at least some of the outer faces of the dielectric block so that groups of adjacent inner conductors among the plurality of inner conductors constitute a plurality of mutually adjacent filters; and  
an outer-conductor-free portion formed at a part of the outer conductor corresponding to a boundary between the mutually adjacent filters.
2. The composite dielectric filter device according to Claim 1, wherein the outer-conductor-free portion is formed continuously around outer faces of the dielectric block.
3. The composite dielectric filter device according to Claim 1, further comprising an input/output terminal extending from one of the outer faces of the dielectric block to another face thereof, the terminal being isolated from the outer conductor and shared by the mutually adjacent filters, with the outer-conductor-free portion arranged continuously with the periphery of the terminal.

4. The composite dielectric filter device according to Claim 2, further comprising an input/output terminal extending from one of the outer faces of the dielectric block to another face thereof, the terminal being isolated from the outer conductor and shared by the mutually adjacent filters, with the outer-conductor-free portion arranged continuously with the periphery of the terminal.

5. The composite dielectric filter device according to Claim 1, further comprising ground-connectable metal covers connected to the outer conductor of the dielectric block, the metal covers being arranged independently for the respective parts of the outer conductor separated by the outer-conductor-free portion.

6. The composite dielectric filter device according to Claim 2, further comprising ground-connectable metal covers connected to the outer conductor of the dielectric block, the metal covers being arranged independently for the respective parts of the outer conductor separated by the outer-conductor-free portion.

7. The composite dielectric filter device according to Claim 3, further comprising ground-connectable metal covers connected to the outer conductor of the dielectric block, the metal covers being arranged independently for the respective parts of the outer conductor separated by the outer-conductor-free portion.

8. The composite dielectric filter device according to Claim 4, further comprising ground-connectable metal covers connected to the outer conductor of the dielectric block, the metal covers being arranged independently for the respective parts of the outer conductor separated by the outer-conductor-free portion.

9. A communication apparatus comprising the composite dielectric filter device according to Claim 1, the composite dielectric filter device being used as an antenna duplexer,

wherein the mutually adjacent filters comprise a transmitting filter and a receiving filter having a transmitting terminal and a receiving terminal, respectively;

wherein the input/output terminal is useable as an antenna terminal for said duplexer; and

wherein a high-frequency circuit is connected to at least one of said transmitting terminal and said receiving terminal.

10. A communication apparatus comprising the composite dielectric filter device according to Claim 2, the composite dielectric filter device being used as an antenna duplexer,

wherein the mutually adjacent filters comprise a transmitting filter and a receiving filter having a transmitting terminal and a receiving terminal, respectively;

wherein the input/output terminal is useable as an antenna terminal for said duplexer; and

wherein a high-frequency circuit is connected to at least one of said transmitting terminal and said receiving terminal.

11. A communication apparatus comprising the composite dielectric filter device according to Claim 3, the composite dielectric filter device being used as an antenna duplexer,

wherein the mutually adjacent filters comprise a transmitting filter and a receiving filter having a transmitting terminal and a receiving terminal, respectively;

wherein the input/output terminal is useable as an antenna terminal for said duplexer; and

wherein a high-frequency circuit is connected to at least one of said transmitting terminal and said receiving terminal.

12. A communication apparatus comprising the composite dielectric filter device according to Claim 5, the composite dielectric filter device being used as an antenna duplexer,

wherein the mutually adjacent filters comprise a transmitting filter and a receiving filter having a transmitting terminal and a receiving terminal, respectively;

wherein the input/output terminal is useable as an antenna terminal for said duplexer; and

wherein a high-frequency circuit is connected to at least one of said transmitting terminal and said receiving terminal.